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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,011	07/07/2003	Masahiko Hosokawa	392.1803	4508

21171 7590 11/15/2005

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EXAMINER

SHECHTMAN, SEAN P

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/613,011	Applicant(s) HOSOKAWA ET AL.	
	Examiner Sean P. Shechtman	Art Unit 2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-13 are presented for examination. Claim 13 has been added.

#### ***Election/Restrictions***

2. Newly submitted claim 13 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: dividing a storage device has a separate utility such as data backup or virus protection.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 13 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

#### ***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 9, 11, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 6,173,208 to Park.

Referring to claim 9, Park teaches a numerical controller for controlling a machine according to a machining program (Col. 1, lines 6-27), comprising: a storage device for storing input/output units (Col. 3, lines 18-26; Figs. 9a and 9b; Col. 7, lines 1-6) each including program block data obtained by dividing the machining program so that divided portions of the machining program are stored in respective ones of the input/output units (Col. 3, lines 27-33; Figs. 9a and 9b, Col. 4, lines 48-65), each input/output units storing additional information associated with the program data stored in the input/output units, said additional information including first link

Art Unit: 2125

data designating an input/output immediately preceding each input/output unit in a sequence of the machining program and second link data designating an input/output unit following each input/output unit in the sequence of the machining program (Col. 4, lines 48-65); a processor for processing the input/output units to run the divided portions of the machining program stored in the input/output units (Col. 5, lines 24-32; Col. 7, lines 13-19).

Referring to claims 11 and 12, Park teaches said processor deletes/adds an input/output unit by changing rear link data of a preceding input/output unit designated by front link data of the input/output unit to be deleted/added to rear link data of the input/output unit to be deleted/added, and changing front link data of an input/output unit designated by rear link data of a succeeding input/output unit to be deleted/added to the front link data of the input/output unit to be deleted/added (Col. 5, lines 1-5; Col. 6, lines 13-29).

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-2, 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,173,208 to Park in view of U.S. Pat. No. 6,088,624 to Khan.

Referring to claim 1, Park teaches a numerical controller for controlling a machine according to a machining program (Col. 1, lines 6-27), comprising: a storage device for storing input/output units (Col. 3, lines 18-26) each including program block data obtained by dividing the machining program so that divided portions of the machining program are stored in respective ones of the input/output units (Col. 3, lines 27-33), each input/output units storing additional information associated with the program data stored in the input/output units, said

Art Unit: 2125

additional information including first link data designating an input/output immediately preceding each input/output unit in a sequence of the machining program and second link data designating an input/output unit following each input/output unit in the sequence of the machining program (Col. 4, lines 48-65); a processor for processing the input/output units to run the divided portions of the machining program stored in the input/output units (Col. 5, lines 24-32; Col. 7, lines 13-19); and an interface for inputting/outputting the input/output units between said storage device or medium and said processor (Cover figure).

Referring to claim 2, Park teaches the controller above, wherein said processor reads a first link data including a program block corresponding to a beginning part of the machining program and successively reads input/output units stored in said storage device or medium according to rear link data in the previously read input/output unit through said interface, and wherein said processor successively executes the program blocks included in the read input/output units (Col. 6, lines 60-62).

Referring to claims 5-8, Park teaches said processor deletes/adds an input/output unit by changing rear link data of a preceding input/output unit designated by front link data of the input/output unit to be deleted/added to rear link data of the input/output unit to be deleted/added, and changing front link data of an input/output unit designated by rear link data of a succeeding input/output unit to be deleted/added to the front link data of the input/output unit to be deleted/added (Col. 5, lines 1-5; Col. 6, lines 13-29).

Park fails to teach that said additional information including an effective data length of the program block. Examiner notes that independent claim 1 does not require that the effective data length be functionally used with respect to any other part of the claim.

However, referring to claim 1, Khan teaches analogous art (Col. 1, lines 18-57 of '624), wherein identifying data structures or its elements within a control program (Col. 2, lines 16-53 of '624) includes software that denotes the size of data of the data elements (Col. 8, lines 1-7 of '624).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of Khan with the teachings of Park.

One of ordinary skill in the art would have been motivated to combine these references because Khan teaches a method of coordinating memory assigned to both input/output devices of an industrial controller and variables of a control program (Col. 1, lines 13-17 of '624). Furthermore, Khan teaches the ability to adopt arbitrary data structures appropriate to a device, having arbitrary size and divided into arbitrary data types, wherein the invention allows selecting data structures for exchanging data with a centralized I/O table memory to identify data structures or elements within the control program (Col. 2, lines 17-53 of '624).

5. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,173,208 to Park in view of U.S. Pat. No. 6,088,624 to Khan, as applied to claims 1-2 above, and further in view of U.S. Pat. No. 5,258,905 to Yamauchi. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,173,208 to Park, as applied to claim 9 above, and further in view of U.S. Pat. No. 5,258,905 to Yamauchi.

Art Unit: 2125

Referring to claims 3, 4, and 10, Park and Khan teach all the limitations set forth above, however, fail to teach a branch instruction is included in the program block of an input/output unit when it is executed by said processor, said processor reads input/output units preceding the input/output unit being executed using the front input/output unit data and reads input/output units following the input/output unit being executed using the rear input/output unit data to search a line designated by the branch instruction, wherein data specifying an input/output unit including a line designated by a branch instruction, and when the branch instruction is included in the program block of the input/output unit in execution said processor reads the input/output unit specified by the data.

However, referring to claims 3 and 10, Yamauchi teaches analogous art, wherein when a branch instruction is included in the program block of an input/output unit when it is executed by said processor, a processor reads input/output units preceding the input/output unit in execution using the front input/output unit data and reads input/output units following the input/output unit in execution using the rear input/output unit data to search a line designated by the branch instruction (Col. 6, lines 39-58 of '905). Referring to claim 4, Yamauchi teaches information further includes data specifying an input/output unit including a line designated by a branch instruction, and when the branch instruction is included in the program block of the input/output unit in execution said processor reads the input/output unit specified by the data (Fig. 2b and Fig. 6; Col. 6, lines 39-58 of '905).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to further modify the teaching Park with the teachings of Yamauchi.

One of ordinary skill in the art would have been motivated to combine these references because Yamauchi teaches an expanded programmable machine controller which can independently carry out debugging, operations, and the like, while not connected to the main body programmable machine controller (Col. 1, lines 7-14 of '905).

***Response to Arguments***

6. Applicant's arguments, see page 7, paragraphs 5-7, filed August 22<sup>nd</sup> 2005, with respect to the rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,298,006 to Miyajima in view of U.S. Pat. No. 5,319,778 to Catino have been fully considered and are persuasive. The rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,298,006 to Miyajima in view of U.S. Pat. No. 5,319,778 to Catino has been withdrawn.

7. Applicant's arguments filed August 22<sup>nd</sup> 2005 have been fully considered but they are not persuasive.

Applicant argues that Park fails to teach a storage device storing a plurality of input/output units, each of the input/output units storing program data obtained by dividing the machining program so that the divided portions of the machining program are stored in respective ones of the input/output units.

For convenience, the examiner has reproduced selected portions of the instant specification wherein applicant describes the input/output units and divided machining program which states, in part:

"The data structure of the machining program will be described referring to FIGS. 2 and 3. The machining program is divided into a plurality of program blocks and additional information is added to each of the program blocks to be associated therewith to form input/output units having the same number as that of the program blocks in one-to-one relation



Art Unit: 2125

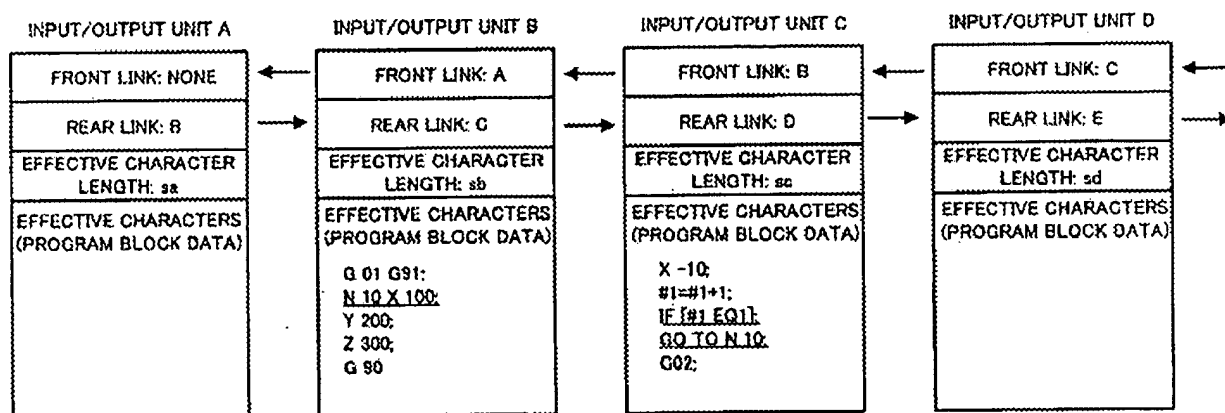
with the program blocks. Thus prepared input/output units are stored in the storage device or the storage medium such as the floppy disk drive 22 or the memory card 24. These input/output units are referred to as an input/output unit A, an input/output unit B, . . . , an input/output unit M, an input/output unit N, . . . , according to a sequence of the original machining program before dividing in this example. The number of the prepared input/output units is "n" in this example." (See page 5, paragraph 3 of the instant specification).

For convenience, the examiner has reproduced selected portions of the instant specification wherein applicant describes the storage device which states, in part:

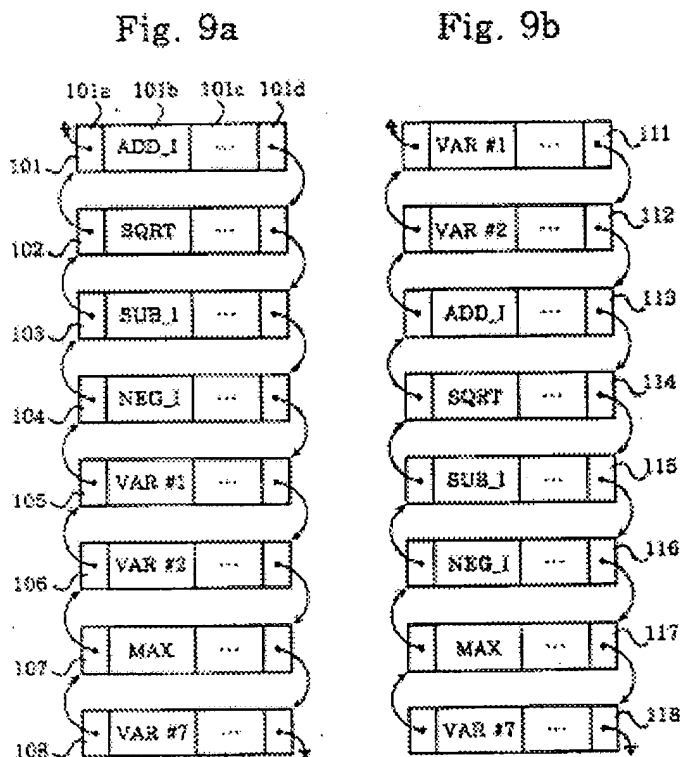
"The machining program prepared in the form of input/output units and stored in the storage device or medium such as the floppy disk drive 22 or the memory card 24 is inputted into the CNC 10 for the execution or the editing of the machining program. Also, the machining program after editing in the CNC 10 may be outputted to the storage device or medium. Procedures of the inputting and outputting of the machining program from/to the storage device or medium are shown in FIG. 4 and FIG. 5, respectively. As shown in FIGS. 4 and 5, it is not necessary to input/output data of the machining program sequentially from the beginning to the end, contrary to the conventional art. For example, the necessary input/output unit or units specified by a manual operation on the keyboard 21 may be inputted and outputted before and after the editing of the machining program." (See page 7, paragraph 2 of the instant specification).

For convenience, the examiner has reproduced Fig. 3 of the instant specification wherein applicant shows the input/output units and divided machining program:

FIG. 3



For convenience, the examiner has reproduced Figs. 9a and 9b of the Park reference wherein Park shows the input/output units and divided machining program:



Applicant argues that Park fails to teach a storage device storing a plurality of input/output units. Park clearly teaches that both the control algorithm edited at step 19 of Fig. 2 and the second list (Fig. 9b) is stored in a hard disk (Col. 7, lines 1-6). Furthermore, Park clearly teaches that the second list (Fig. 9b) is not created independently but constructed by adjusting pointers to blocks in the first list and due to this no additional memory space is needed. The examiner respectfully submits that if no additional memory space is needed the list must already be stored in memory. The examiner respectfully submits that the block diagram lists shown above, and being stored in memory, is a storage device storing a plurality of input/output units.

Applicant argues that Park fails to teach each of the input/output units storing program data obtained by dividing the machining program so that the divided portions of the machining program are stored in respective ones of the input/output units. The instant specification teaches the input/output units storing the program as the “machining program” being “divided into a plurality of program blocks and additional information” being “added to each of the program blocks to be associated therewith to form input/output units having the same number as that of the program blocks in one-to-one relation with the program blocks” (See page 5, paragraph 3 of the instant specification). Figs. 9a and 9b clearly shows divided portions of the machining program, for example, “ADD\_I” and “SQRT”. Figs. 9a and 9b clearly shows a “machining program is divided into a plurality of program blocks and additional information is added to each of the program blocks to be associated therewith to form input/output units having the same number as that of the program blocks in one-to-one relation with the program blocks” (See page 5, paragraph 3 of the instant specification). “ADD\_I” has additional information with it that makes up input/output unit 101. “SQRT” has additional information with it that makes up input/output unit 102, etc. This is true for both Figs. 9a and 9b (See Col. 4, lines 48-65 of Park). The examiner respectfully submits that elements 101, 102, etc, shown above with program blocks “ADD\_I”, “SQRT”, etc, clearly divided among elements 101, 102, etc, is each of the input/output units storing program data obtained by dividing the machining program so that the divided portions of the machining program are stored in respective ones of the input/output units.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/613,011

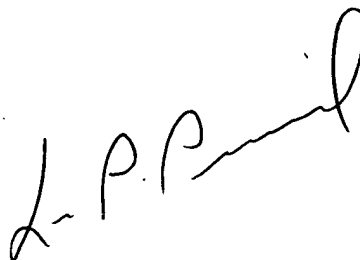
Page 12

Art Unit: 2125

SPS

Sean P. Shechtman

November 2, 2005

A handwritten signature in black ink, appearing to read "L. P. Picard". The signature is written in a cursive, flowing style with a long horizontal stroke at the end.

**LEO PICARD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100**